

List of publications Einar Heiberg (born Brandt)

In total there are 32 *peer reviewed* publications, 4 papers submitted and under review, and 69 regular conference proceedings. **Bold** font indicates position in the author list and underline indicates first or last authorship.

1. Peer reviewed scientific output

- [1] E. Brandt, L. Wigström, and B. Wranne, Segmentation of Echocardiographic Image Sequences Using Spatio-temporal Information. *MICCAI99*, Cambridge, pp 410-419 LNCS, Springer Verlag, ISSN 0302-9743, 1999.
- [2] C. Pislaru, J. D'Hooge, S. V. Pislaru, **E. Brandt**, R. Cipic, C. E. Angermann, F. J. Van de Werf, B. Bijnens, M. Herregods, and G. R. Sutherland, Is there a change in myocardial nonlinearity during the cardiac cycle?, *Ultrasound in Medicine and Biology* 27(3) pp. 389-98, 2001.
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- [5] P. Selskog. **E. Heiberg**. T. Ebbers, L. Wigström, M. Karlsson. Kinematics of the Heart: Strain Rate Imaging from Time-Resolved Three-Dimensional Phase Contrast MRI. *IEEE Transactions on Medical Imaging*, vol 21(9), pp 1105-1109, Sept 2002.
- [6] A. Sigfridsson, T. Ebbers, **E. Heiberg**, L. Wigström, Hybrid visualization of tensorfields from Medical data Visualization. *IEEE Visualization*, pp 371-378 Boston, 2002. 8 pages.
- [7] E. Heiberg, T. Ebbers, L. Wigström, and M. Karlsson, Three Dimensional Flow Characterization using Vector Pattern Matching, *IEEE Transactions on Visualization and Computer Graphics*, vol 9:3, pp 313-319, 2003. 4 pages.
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- [12] H. Engblom, E. Hedstrom, **E. Heiberg**, G. S. Wagner, O. Pahlm, and H. Arheden, Size and transmural extent of first-time reperfused myocardial infarction assessed by cardiac magnetic resonance can be estimated by 12-lead electrocardiogram, *Am Heart J* 150(5) p 920, 2005.
- [13] C. Carlhäll, L. Wigstrom, **E. Heiberg**, M. Karlsson, A. F. Bolger, and E. Nylander, Comparing apples with oranges - different aspects of left ventricular volume change, *Am J Physiol Heart Circ Physiol* 291(November) pp. H2551-H2552, 2006.
- [14] J. Svensson, R. Gårdhagen, **E. Heiberg**, T. Ebbers, D. Loyd, T. Länne, and M. Karlsson, Feasibility of Patient Specific Aortic Blood Flow CFD Simulation. In Proceedings of *MICCAI06*, Copenhagen, 2006. 10 pages.
- [15] A. F. Bolger, **E. Heiberg**, M. Karlsson, L. Wigstrom, J. Engvall, A. Sigfridsson, T. Ebbers, J. P. Kvitting, C. J. Carlhall, and B. Wranne, Transit of blood flow through the human left ventricle mapped by cardiovascular magnetic resonance, *J Cardiovasc Magn Reson* 9(5) pp. 741-7, 2007. **[Awarded best paper of the year by the Society of Cardiovascular Magnetic Resonance Imaging]**.
- [16] H. Engblom, M. B. Carlsson, E. Hedstrom, **E. Heiberg**, M. Ugander, G. S. Wagner, and H. Arheden, The endocardial extent of reperfused first-time myocardial infarction is more predictive of pathologic Q waves than is infarct transmural: a magnetic resonance imaging study, *Clin Physiol Funct Imaging* 27(2) pp. 101-8, 2007.
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- [18] **E. Heiberg**, H. Engblom, M. Ugander, and H. Arheden, Automated Calculation of Infarct Transmurality. In Proceedings of *IEEE Computers in Cardiology*, Durham, USA, 2007. 4 pages.
- [19] L. Rosendahl, P. Blomstrand, **E. Heiberg**, J. Ohlsson, P. G. Björklund, B. M. Ahlander, and J. Engvall, Computer-assisted calculation of myocardial infarct size shortens the evaluation time of contrast-enhanced cardiac MRI, *Clin Physiol Funct Imaging* 28(1) pp. 1-7, 2008.
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- [25] M. Gotberg, G. K. Olivecrona, H. Engblom, M. Ugander, J. van der Pals, **E. Heiberg**, H. Arheden, and D. Erlinge, Rapid short-duration hypothermia with cold saline and endovascular cooling before reperfusion reduces microvascular obstruction and myocardial infarct size, *BMC Cardiovasc Disord* 8 p 7, 2008.
- [26] L. Struwe, S. Haag, **E. Heiberg**, and J. R. Grant, Andean Speciation and Vicariance in Neotropical *Macropipera* (Gentianaceae-Heleiaeae), In press, *Annals of Missouri Botanical Garden*. [Impact factor 2.98].
- [27] H. Sonesson, J. F. Ubachs, M. Ugander, H. Arheden, and **E. Heiberg**, An Improved Method for Automatic Segmentation of the Left Ventricle in Myocardial Perfusion SPECT, *J Nucl Med* 50(2) pp. 205-13, 2009.
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- [29] L. Galeotti, D. G. Strauss, J. F. Ubachs, O. Pahlm, and **E. Heiberg**, Development of an automated method for display of ischemic myocardium from simulated electrocardiograms, *J Electrocardiol*, 2009.
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2. Regular peer reviewed conference abstracts

Regular peer reviewed abstracts, not listed above.

- [1] P. Selskog, **E. Brandt**, L. Wigström, and M. Karlsson, Quantification of myocardial strain-rate from 3D cine phase contrast MRI. In Proceedings of *ESMRMB 2000*, Paris, France, 2000.
- [2] **E. Brandt**, T. Ebbers, L. Wigström, J. Engvall, and M. Karlsson, Automatic Detection of Vortical Flow Patterns from Three-dimensional Phase Contrast MRI. In Proceedings of *ISMRM 9*, p 1838, Glasgow, 2001.
- [3] J.-P. Kitting-Escobar, **E. Brandt**, L. Wigström, and J. Engvall, Visualization of Flow in the Aorta Using Time-resolved 3D Phase Contrast MRI. In Proceedings of *ISMRM 9*, p 378, Glasgow, 2001.
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- [8] E. Yoon, J. Engvall, T. Ebbers, **E. Brandt**, L. Wigström, and B. Wranne, Reversal of blood flow in the descending aorta: implications for Doppler quantitation of aortic insufficiency. *American College of Cardiology, 51:st Annual Scientific Session*, p 425A, 2002.
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- [10] **E. Heiberg**. Multimodal segmentering av vänster kammare. In Proceedings of *Svenska läkarsällskapets riksstämman*, Göteborg, 2004.
- [11] L. Rosendahl, B.-M. Ahlander, P.-G. Björklund, P. Blomstrand, **E. Heiberg**, J. Ohlsson, and J. Engvall, Halvautomatisk beräkning av infarktutbredning vid kontrastförstärkt MR. In Proceedings of *Svenska läkarsällskapets riksstämman*, Göteborg, 2004.

- [12] A.F. Bolger, **E. Heiberg**, A. Sigfridsson, J-P. Kvitting, M. Karlsson, L. Wigström, Subset Analysis of Global Left Ventricular Blood Flow, In Proceedings of *SCMR*, San Fransisco, 2005.
- [13] **E. Heiberg**, L. Wigström, M. Carlsson, and M. Karlsson, Three dimensional Time Resolved Segmentation of the Left Ventricle. In Proceedings of *ISMRM05*, Miami Beach, Florida, USA, 2005.
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- [15] L. Rosendahl, **E. Heiberg**, J. Ohlsson, P. G. Bjorklund, B.-M. Ahlander, P. Blomstrand, and J. Engvall, Myocardial Infarct Size determined with Contrast-Enhanced MRI and Myocardial SPECT. In Proceedings of *Euro-CMR*, Zurich, 2005.
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- [18] **E. Heiberg**, H. Engblom, J. Engvall, E. Hedström, M. Ugander, and H. Arheden, Automated quantification of delayed contrast-enhanced MR images. In Proceedings of *ISMRM Fourteenth Scientific Sessions*, Miami, 2006.
- [19] J. Svensson, R. Gårdhagen, **E. Heiberg**, T. Ebbers, T. Länne, and M. Karlsson, Validation of Simulated Velocity of Blood in Patient Specific Aorta. In Proceedings of *XIII Cardiovascular Spring Meeting*, Linköping, 2006.
- [21] H. Engblom, E. Hedström, **E. Heiberg**, and H. Arheden, Timing and Magnitude of Infarct Resorption in Relation to Recovery of Global Left Ventricular Function in Patients with Reperfused Myocardial Infarction. In Proceedings of *American Heart Association*, Chicago, USA, 2006.
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- [25] A. F. Bolger, **E. Heiberg**, A. Sigfridsson, J.-P. E. Kvitting, J. Engvall, L. Wigström, M. Karlsson, and B. Wranne, Preservation of Diastolic Kinetic Energy: A marker of Ventricular Efficiency?, *J Am Coll Cardiol* 47(4 suppl 1) p 49A, 2006.
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- [29] H. Engblom, E. Hedström, **E. Heiberg**, G. Wagner, O. Pahlm, and H. Arheden, Time course of regional functional recovery of infarcted, adjacent and remote myocardial segments in patients with reperfused myocardial infarction. In Proceedings of *Tenth Annual SCMR Scientific Sessions*, Rome, Italy, 2007.
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- [32] M. Carlsson, M. Ugander, **E. Heiberg**, and H. Arheden The quantitative relationship between longitudinal and radial function in left, right and total heart pumping in humans. In Proceedings of *IX Cardiovascular Spring Meeting*, Göteborg, Sweden, 2007.
- [33] **E. Heiberg**, K. Markenroth, M. Carlsson, and H. Arheden Validation of free software for automated vessel delineation and MRI flow analysis. In Proceedings of *IX Cardiovascular Spring Meeting*, Göteborg, Sweden, 2007.
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- [36] H. Engblom, E. Hedstrom, **E. Heiberg**, G. S. Wagner, O. Pahlm, and H. Arheden Early and late time course of infarct resorption and recovery of global left ventricular function in patients with first reperfused myocardial infarction. In Proceedings of *IX Cardiovascular Spring Meeting*, Göteborg, Sverige, 2007.
- [37] H. Engblom, M. Carlsson, E. Hedstrom, **E. Heiberg**, G. S. Wagner, and H. Arheden Investigation of the pathologic basis of Q waves with MR imaging as reference method. In Proceedings of *IX Cardiovascular Spring Meeting*, Göteborg, Sverige, 2007.
- [38] E. Bergvall, M. Carlsson, **E. Heiberg**, J. Pelle, and H. Ahrheden, Regional Left Ventricular Functional Improvement after Left Ventricular Reconstructive Surgery shown by Strain MRI. In Proceedings of *Svenska läkarsällskapets riksstämman*, 2007.
- [39] A. Bolger, **E. Heiberg**, P. Dyverfeldt, M. Carlsson, P. Johnsson, K. Markenroth, A. Sigfridsson, J. Engvall, T. Ebbers, and H. Ahrheden, Tredimensionellt MR-blodflöde och diastolisk kinetisk energi kvantifierat med magnetisk resonanstomografi efter kirurgiskt vänsterkammars rekonstruktion. Ny teknik för utvärdering av kammarsfunktion. In Proceedings of *Svenska läkarsällskapets riksstämman*, 2007.
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- [41] **E. Heiberg**, H. Engblom, M. Ugander, and H. Arheden, Automatisk beräkning av infarkttransmuralitet från kontrastförstärkt magnetisk resonans av hjärtat. In Proceedings of *Svenska läkarsällskapets riksstämman*, 2007.
- [42] **E. Heiberg**, H. Sonesson, E. Bergvall, E. Hedstrom, and H. Ahrheden, Analys av strain kan oberoende identifiera påverkat kärl efter akut koronart syndrom. In Proceedings of *Svenska läkarsällskapets riksstämman*, 2007.
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- [45] **E. Heiberg**, H. Sonesson, E. Bergvall, K. Steding, and H. Ahrheden, Normal values for strain calculated from velocity encoded MRI. In Proceedings of *Eleventh Annual SCMR Scientific Sessions*, 2008.

- [46] A. Otto, H. Engblom, **E. Heiberg**, U. Martin, M. Götberg, G. Olivecrona, D. Erlinge, and H. Ahrheden, The hyperenhanced region assessed by ex vivo de-MRI is consistently larger than infarct size determined by TTC staining in the acute phase of reperfused ischemic myocardial injury. In Proceedings of *Eleventh Annual SCMR Scientific Sessions*, 2008.
- [47] U. Pahlm-Webb, E. Hedström, **E. Heiberg**, E. Bergvall, H. Sonesson, and H. Ahrheden, Quantification of left ventricular strain using turbo field echo produces less variable data than using fast field echo. In Proceedings of *Eleventh Annual SCMR Scientific Sessions*, 2008.
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- [54] P. Sörensson, **E. Heiberg**, N. Saleh, F. Bouvier, K. Caidahl, P. Tornvall, L. Rydén, J. Pernow, and H. Arheden, Contrast Enhanced Cine Magnetic Resonance Imaging - Novel and Accurate Method for Estimation of Myocardium at Risk in Man. In Proceedings of *X Cardiovascular Spring Meeting*, 2008.
- [55] A. Otto, H. Engblom, **E. Heiberg**, M. Ugander, M. Götberg, G. Olivecrona, D. Erlinge, and H. Arheden, Delayed Enhancement MRI Overestimates Myocardial Infarct Size in the Acute Phase of Reperfused Ischemic Injury. In Proceedings of *X Cardiovascular Spring Meeting*, 2008.
- [56] M. Carlsson, J. Ubachs, E. Hedström, **E. Heiberg**, S. Jovinge, and H. Arheden, Myocardial at Risk and Myocardial Salvage after Acute Infarction in Humans;

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- [57] A. Otto, H. Engblom, **E. Heiberg**, M. Ugander, M. Götberg, G. Olivecrona, D. Erlinge, and H. Arheden, DE-MRI Overestimates Myocardial Infarct Size in the Acute Phase. In Proceedings of *Riksstämman Göteborg*, 2008.
- [58] U. Pahlm-Webb, **E. Heiberg**, E. Hedström, and H. Arheden, Evolution of left ventricular strain after a first time myocardial infarct. A study using velocity encoded Magnetic Resonance Imaging. In Proceedings of *Riksstämman Göteborg*, 2008.
- [59] U. Pahlm-Webb, **E. Heiberg**, K. Steding, and H. Arheden, Female and male elite athletes have similar left ventricular strain when compared to healthy controls despite larger left ventricular size. A study using velocity encoded Magnetic Resonance Imaging. In Proceedings of *Riksstämman Göteborg*, 2008.
- [60] J. Sjögren, M. Ugander, H. Arheden, and **E. Heiberg**, Fully Automated Identification of the Heart and Coronary Ostia in Coronary Computed Tomography Angiography. In Proceedings of *Riksstämman Göteborg*, 2008.
- [61] H. Sonesson, J. Ubachs, M. Ugander, H. Arheden, and **E. Heiberg**, An Improved Method for Automatic Segmentation of the Left Ventricle in Myocardial Perfusion SPECT:. In Proceedings of *Riksstämman Göteborg*, 2008.
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- [64] H. Sonesson, J. Ubachs, M. Ugander, H. Arheden, and **E. Heiberg**, A More Accurate Method for Automatic Segmentation of Left Ventricular Mass by Spect. In Proceedings of *American Heart Association*, 2008.
- [65] M. Carlsson, J. Ubachs, **E. Heiberg**, E. Hedstrom, S. Jovinge, and H. Arheden, Myocardium at risk and myocardial salvage after acute infarction in humans; quantification by magnetic resonance imaging. In Proceedings of *Twelvth Annual SCMR Scientific Sessions+*, Orlando, FL, USA, 2009.
- [66] J. Ubachs, **E. Heiberg**, K. Steding, and H. Arheden, Normal values for wall thickening by magnetic resonance imaging. In Proceedings of *Twelvth Annual SCMR Scientific Sessions*, Orlando, FL, USA, 2009.
- [67] J. Sjögren, M. Ugander, H. Arheden, and **E. Heiberg**, A novel prototype-based segmentation requiring only five training cases applied to MR angiography. In Proceedings of *Twelvth Annual SCMR Scientific Sessions*, Orlando, FL, USA, 2009.

- [68] J. Töger, M. Ugander, H. Arheden, and **E. Heiberg**, Volume tracking - a novel method for visualization and quantification of intracardiac blood flow 3D time resolved phase contrast MRI. In Proceedings of *Twelvth Annual SCMR Scientific Sessions*, Orlando, FL, USA, 2009.
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3. Review papers, book chapters, books

Not applicable

4. Patents

Not applicable.

5. Publically available software

- [1] **MPI Toolkit**. Parallel programming toolbox for Matlab. Makes it easy to write programs that use multiple processors in a cluster or shared memory environment using Matlab. Approximately around 2000 downloads. Available on <http://www.mathworks.com/matlabcentral>
- [2] **Extract**. Research software for analysis of ultrasound images (segmentation, parameter extraction). Directly reads image files from Vingmed system FiVe ultrasound machines and Echopac. Available on request.
- [3] **Tensorarray toolbox**. Toolbox for Matlab to manage tensorarray's. Has been selected as a component in the Tensor Grand Challenge, one division from the Work Package 10 of the European Network of Excellence SIMILAR. <http://einar.heiberg.se/misc.htm>
- [4] **Segment**. Comprehensive software for quantitative medical image analysis. Currently used by around 400 research groups spread over 73 countries. Downloaded by approximately 3-4 new research groups per week. Conditions of usage is to refer to relevant scientific publications about the software. <http://segment.heiberg.se>
- [5] **SEEVA**. Software for Spatial Evolutionary and Ecological Vicariance Analysis. This software implements a novel method to investigate historical and geographical patterns of plant speciation. <http://www.heiberg.se/seeva>

6. Popular science papers/presentations

- [1] Article in Comsol News, Matematisk modell hjälper hjärtsjuka, issue 1, COMSOL AB, 2001.